

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:
a semiconductor substrate;
a flat-plate-shaped cavity made in the
5 semiconductor substrate; and
an element isolating region formed in the surface
of the semiconductor substrate and located at the sides
of the cavity.
2. The semiconductor device according to claim 1,
10 wherein the area of the top of the cavity is larger
than the area of the base of an element region provided
at the top of the cavity.
3. The semiconductor device according to claim 1,
wherein the element isolating region and the cavity
15 enclose the element region provided at the top of the
cavity and electrically separate the element region
from the semiconductor substrate.
4. The semiconductor device according to claim 1,
wherein only one element region is provided at the top
20 of the cavity.
5. The semiconductor device according to claim 1,
wherein the base of the element isolating region is
less deep than the bottom of the cavity and deeper than
the top of the cavity.
- 25 6. The semiconductor device according to claim 1,
wherein the element isolating region is formed of an
oxide film obtained by oxidizing the semiconductor

substrate.

7. A semiconductor device comprising:

a semiconductor substrate;

5 a plurality of flat-plate-shaped cavities made in the semiconductor substrate; and

an element isolating region formed in the surface of the semiconductor substrate between adjacent ones of the cavities, a part of the element isolating region being exposed to the sides of the cavities.

10 8. The semiconductor device according to claim 7, wherein the area of the top of each cavity is larger than the area of the base of an element region provided at the top of each of the cavities, respectively.

15 9. The semiconductor device according to claim 7, wherein the element isolating region and the cavities enclose the element regions provided at the top of the cavities and electrically separate the element regions from the semiconductor substrate.

20 10. The semiconductor device according to claim 7, wherein only one element region is provided at the top of the cavity.

25 11. The semiconductor device according to claim 7, wherein the base of the element isolating region is less deep than the bottom of the cavities and deeper than the top of the cavities.

12. The semiconductor device according to claim 7, wherein the element isolating region is formed of

an oxide film obtained by oxidizing the semiconductor substrate.

13. A semiconductor device comprising:

5 a first semiconductor layer formed on a first region of a semiconductor substrate;

a second semiconductor layer formed above a second region of the semiconductor substrate;

a cavity located between the semiconductor substrate and the second semiconductor layer; and

10 an element isolating region formed on the semiconductor substrate between the first and second semiconductor layers and electrically separating the first semiconductor layer and second semiconductor layer from each other, a part of the element isolating
15 region being exposed to the sides of the cavity.

14. The semiconductor device according to claim 13, wherein the area of the top of the cavity is larger than the area of the base of the second semiconductor layer provided at the top of the cavity.

20 15. The semiconductor device according to claim 13, wherein the element isolating region and the cavity enclose the second semiconductor layer provided at the top of the cavity and electrically separate the second semiconductor layer from the semiconductor
25 substrate.

16. The semiconductor device according to claim 13, wherein the only one second semiconductor

layer provided at the top of the cavity.

17. The semiconductor device according to claim 13, further comprising

5 a DRAM cell formed on the first semiconductor layer and

a logic circuit which is formed on the second semiconductor layer and controls the DRAM cell.

18. The semiconductor device according to claim 13, wherein the base of the element isolating
10 region is less deep than the bottom of the cavity and deeper than the top of the cavity.

19. The semiconductor device according to claim 13, wherein the element isolating region is made
15 of an oxide film obtained by oxidizing the semiconductor substrate.

20. A method of fabricating a semiconductor device, comprising:

making flat-plate-shaped cavities partly in a semiconductor substrate;

20 forming an insulating film in the surface of the semiconductor substrate between adjacent ones of the cavities in such a manner that a part of the insulating film is exposed to the sides of the cavities so as to electrically separate element regions provided at the
25 top of the adjacent cavities from each other; and

forming semiconductor elements on the element regions.

21. The method according to claim 20, wherein the insulating film is formed by oxidizing the surface of the semiconductor substrate.

5 22. The method according to claim 20, wherein the area of the top of each cavity is larger than the area of the base of the element region provided at the top of each of the cavities, respectively.

10 23. The method according to claim 20, wherein the insulating film and the cavities enclose the element regions and electrically separate the element regions from the semiconductor substrate.

24. The method according to claim 20, wherein only one element region provided at the top of each of the cavities.

15 25. The method according to claim 20, wherein the base of the insulating film is less deep than the bottom of the cavities and deeper than the top of the cavities.

20 26. The method according to claim 20, wherein the cavities are made in first regions of the semiconductor substrate, and

forming the semiconductor elements includes forming DRAM cells on the element regions in the first regions, and forming a logic circuit which controls the
25 DRAM cells in a second region of the semiconductor substrate.